

**REMARKS**

Briefly, for the convenience of the Examiner, it is noted that applicants' invention is directed to a probe assembly for making electrical contact with circuit elements on an integrated circuit wafer. The probe assembly includes a number of recited structural elements. In particular, one of these elements is a wire probe. This wire probe comprises a core material which is plated with material selected from the group consisting of nickel, gold, nickel alloys and gold alloys. This wire probe has a core diameter 'd', a thickness 'p' and an offset 'L' as illustrated in applicants' Fig. 2. Most relevant to the present invention, the present applicants' have discerned that there is a desired relationship that exists amongst these three variables (p, d, and L). In particular, the desired relationship for these variables is illustrated in applicants' Figs. 4A-4D. In particular, applicants' have discerned that it is desirable that these parameters be related in a very specific fashion so as to provide the probe assembly with certain desirable properties. These desirable properties include: (1) providing a sufficient contact force between the probe and the circuit wafer; (2) providing the desired contact force consistently over many operations; and (3) providing a contact force which is consistent with long probe lifetime.

Attention is now specifically directed to the rejection of applicants' claims under 35 U.S.C. § 112. The examiner has objected to the applicants' recitation in claim 1 (and the claims which depend therefrom) to applicants' Figs. 4A-4D. While it is admittedly unusual for reference to be made in claims to a figure, it is nonetheless permitted and indeed appropriate in certain circumstances. This is clearly one of those circumstances. In this regard, the examiner's attention is redirected to the case of *In re Tanczyn* (CCPA March 11, 1953). In the case of *In re Tanczyn* reference to a figure was permitted. In the case of *In re Tanczyn* the claim limited the manganese content in a stainless steel alloy by reference to "amounts beneath the curve in the accompanying diagram." In this case, which met the criteria for the permissible use of reference to a

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figure in a claim, there was only one variable, namely, the manganese content. If a reference to a figure in a claim is permitted in a single variable case, then a fortiori it is permissible in a case which is more complicated and which in fact includes not just one parameter or two parameters but rather three parameters: p, d, and L. Accordingly, the case law in this area clearly supports applicants' position that the reference to Figs. 4A-4D in applicants' claim 1 and the claims which depend therefrom is not only appropriate but clearly convenient and indeed necessary.

However, even if one does not rely upon case law, common sense and an understanding of the purposes of 35 U.S.C. § 112 clearly favor applicants' position. In particular, it is noted that 35 U.S.C. § 112 is designed to provide a description of applicants' invention in ways which are most readily understood by those of ordinary skill in the art both in terms of being able to practice the invention and in terms being able to avoid infringement of the claimed invention. Those of ordinary skill in the art would be fully capable of understanding the relationship between the variables p, d, and L as set forth in Figs. 4A-4D. The last two hundred years of mathematical thought have taught the technical world that it is equally useful to have relationships between variables described graphically as opposed to merely by a set of equations. It should also be fully appreciated that the well known rubric "a picture is worth a thousand words" is fully applicable here. Even if applicants' attorney were to attempt to describe the regions set forth in Figs. 4A-4D in words, the resulting textual description would be long, obtuse, vague, hard to understand, and in the end would be nothing more than a mere regurgitation of the information content provided graphically; albeit, now in a much less useful form.

Applicants' attorney would also like to point out to the examiner that other government agencies are also adopting a more graphical approach. In particular, the Federal Aviation Administration has either adopted or is in the process of adopting graphical depictions of areas across the US subject to temporary flight restrictions

(TFRS). Previous textual-only descriptions of these regions has resulted in pilot confusion and difficulties in understanding the boundaries. In light of these difficulties and the undesirable air space incursions that can and have resulted, the FAA is indeed adopting an approach which is more understandable to human beings. Accordingly, as a point of information and consideration it is therefore noted that other federal agencies are also adopting a graphical or visual approach. Clearly such approaches are more understandable and appreciated by human beings.

Also, as pointed out previously to the examiner, it is noted that Figs. 4A-4D do indeed provide a sufficient indication of those values of p, d, and L (selected conjointly) which would be infringing values. In particular, it is further noted that in paragraph 28 of applicants' specification, it is stated that "for values of p between the selected values [referring to the drawings for p = 0.3 mils, p = 0.4 mils, p = 0.5 mils and p = 0.6 mils] linear interpolation provides an acceptable approximation in the p direction." Consider for example the situation in which L = 70 mils, d = 1.4 mils, and plating thickness is p = 0.3 mils. Clearly, this is a point in Fig. 4A which is outside of the accepted region. However, if the plating thickness p were 0.6 mils, this would be an acceptable set of values for p, L, and d. Clearly, the point for L = 70 mils and d = 1.4 mils appears at the same relative point on each of the four figures shown (4A-4D). Also clearly, plating thicknesses of 0.3, 0.4, or 0.5 mils are seen to lie outside of the acceptable regions for these values of L and d. The fact that this point lies within the acceptable region shown in Fig. 4D for a plating thickness of p = 0.6 mils indicates that there is a change from acceptable to unacceptable for this value of L and d between a plating thickness of 0.5 mils and 0.6 mils. A measurement from Fig. 4C indicates that the L = 70, d = 1.4 point is 2 arbitrary units vertically away from the acceptable region. Likewise a similar measurement in Fig. 4D indicates that there is a distance of 5.5 arbitrary units between the point L = 70 and d = 1.4. This yields an extrapolated increment from Fig. 4C of  $(2/(2+5.5)) \times 0.1$  mils. Thus indicating that the change from acceptable to unacceptable occurs at a plating thickness of approximately 0.53 mils. Accordingly, it is seen that it is

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trivially easy even for those of the most meager skill in the technical arts to determine what is and is not an acceptable set of values for p, d, and L. In point of fact, any freshman college math student completely unskilled in the relevant arts could make this determination. Accordingly, it is seen that the reference in applicants' Claim 1 to Figs. 4A-4D is not only desirable, it is furthermore very convenient and extremely easily understood by even those of meager skill in the art.

Accordingly, it is clearly seen that those of ordinary skill in the art would fully and unambiguously understand the recited limits of the claimed invention. Furthermore, it is equally clear that if applicants' attorney was to translate the four figures shown into a set of at least 12 separate equations it would be much more difficult for the reader to discern the limits of the claimed invention.

Applicants herein are also aware of the language found in MPEP § 2173.05(s) which is reproduced below in relevant part for the convenience of the Examiner:

"Where possible, claims are to be complete in themselves. Incorporation by reference to a specific figure or table "is permitted only in exceptional circumstances where there is no practical way to define the invention in words and where it is more concise to incorporate by reference than duplicating a drawing or table into the claim. Incorporation by reference is a necessity doctrine, not for applicant 's convenience." *Ex parte Fressola*, 27 USPQ2d 1608,1609 (Bd. Pat. App. & Inter. 1993) (citations omitted)."

Applicant's assert, however, that: (1) there is no other practical way to define the invention; (2) that the reference in applicants' claim 1 to Figures 4A - 4D is not for the convenience of the applicant; (3) that the direct inclusion of Figures 4A - 4D into claim 1 would be the antipathy of conciseness; (4) that the case of *Ex parte Fressola* is clearly distinguishable; (5) that the case of *In re Tanczyn*, 202 F.2d 785, 97 USPQ 150 (CCPA

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1953) is much more relevant than the case of *Ex parte Fressola* which cites *In re Tanczyn* approvingly; and (6) that the case of *In re Tanczyn* speaks with more legal authority than *Ex parte Fressola*.

With particular reference to point (4) above, it is noted that the case of *In re Fressola* deals with the issue of the older, now unapproved *omnibus* style of claim drafting. In particular, the claim in *In re Fressola* reads: "A system for the display of stereographic three-dimensional images of celestial objects **as disclosed in the specification and drawings herein.**" [Emphasis added herein.] In contrast, the claim in *In re Tanczyn* reads as follows: "In manufactures of the class described, wrought and polished straight chromium stainless steel sheet, strip, wire and like products containing large amounts of chromium and small amounts of manganese and silicon which products are substantially free of surface-defacing complex silicate inclusions and comprise 10% to 27% chromium, up to about 0.2% manganese and from incidental amounts up to about 1% silicon **with said manganese content restricted to amounts beneath the curve in the accompanying diagram corresponding to the specific amount of said chromium,** and the remainder substantially all iron." [Emphasis added herein.] It is noted that the court in *In re Tanczyn* had no problems whatsoever in reading and applying the claims vis a vis the cited art.

With reference to point (1) above, it is noted, as pointed out above, that the textual description of applicants' invention would have to include the recitation of **at least one dozen separate linear equations with each such equation being accompanied by a range of variables over which it was applicable.** This is neither a practical nor a desirable way to convey the import and scope of the invention which clearly depends on the complex relation amongst three independent variables. Not only is this approach impractical, it would also serve to introduce inexactitudes of measurement into the description. While measurements in the figures made by those of ordinary skill in the art would be more than adequate to define the scope of the

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invention, there is no need whatsoever to introduce the possibility of a claim drafter's textual and measurement errors into what is an already well defined description.

For all of the above cited reasons, it is applicants' position that claim 1 as presently constituted including the reference to Figs. 4A-4D is in full compliance with 35 U.S.C. § 112. The invention claimed is specified in a clear, unambiguous, and furthermore easily comprehensible form. Furthermore, if a single variable is permitted to be described in a graphical way as in the case of In re Tanczyn, it is so very much more appropriate that a relationship specified amongst three variables be permitted to be described in a similar graphical fashion. If a single variable case is appropriate for this treatment, then a two variable case is even more appropriate and a three variable case becomes virtually impossible to describe otherwise. Accordingly, it is therefore respectfully requested that the rejection of applicants' claims 1-9 under 35 U.S.C. § 112 be withdrawn.

Attention is now directed to the rejection of applicants' claims 1-9 under 35 U.S.C. § 102. While the cited art discloses a very similar structure, the teachings found within the cited patent (Hamel et al., US Patent 6,404,211) are nonetheless totally and absolutely devoid of any teachings whatsoever concerning the notion that there is a desirable relationship between the variables p, d, and L. However, as clearly set out in applicants' claim 1 and the claims which depend therefrom this relationship is specifically stated and found in all of applicants' claims. Accordingly, there are in fact very significant differences between that which is claimed and that which is disclosed in the patent Hamel et al. Furthermore, since Hamel et al. fail to teach, disclose, or even remotely suggest desirable relationships amongst the variables p, d, and L, the teachings of this patent cannot and should not be used as a basis for rejecting applicants' claims under 35 U.S.C. § 102 or even under 35 U.S.C. § 103. In short, the recitation found in lines 22-29 of applicants' claim 1 clearly distinguish the present

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invention from that which is disclosed in Hamel et al. These recitations in applicants' claim 1 describe aspects which are not present in Hamel et al., nor are they in any way remotely even suggested by Hamel et al. Accordingly, it is therefore respectfully requested that the rejection of applicants' claims 1-9 under 35 U.S.C. § 102 be withdrawn.

With respect to the objection that the examiner has raised to applicants' specification on page 7, line 17, it is noted that this change has already been made. In this regard, the examiner's attention is directed to applicants' response submitted on January 16, 2003. Accordingly, it is seen that it is not necessary to make this change a second time. Rather, the examiner is directed to the aforementioned January response.

It is noted that the present response does not require the payment of any additional fees. It is also noted that the present response does not amend applicants' specification or claims in any way. Nonetheless, it is noted that this is a response to 37 C.F.R. § 1.116 and that expedited action on the part of the examiner is hereby requested so as to provide the applicant with an advisory action as soon as possible.

Accordingly, it is now seen that all of the applicants' claims are in condition for allowance. Therefore, early notification of the allowability of applicants' claims is earnestly solicited. Furthermore, if there are any matters which the Examiner feels could be expeditiously considered and which would forward the prosecution of the instant application, applicants' attorney wishes to indicate his willingness to engage in

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any telephonic communication in furtherance of this objective. Accordingly, applicants' attorney may be reached for this purpose at the numbers provided below.

Respectfully submitted,

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